Water Level Sensor Development

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The problem being addressed is that of providing accurate, low cost water level measurement for use with water measurement devices for small canals and irrigation turnouts. The Water Resources Research Laboratory (WRRL), through an active water measurement and conservation program, has been working for years with farmers and irrigation districts to implement water measurement devices for small canals and farm turnouts. Continuous measurement of the flow volumes being delivered is necessary to ensure that the water paid for is actually being delivered and that water conservation goals are being met. Several frequently encountered problems have lead to this project, including a reluctance to use high tech black boxes that are expensive and difficult to understand.

The project objectives are to work with equipment manufacturers and Reclamation R&D engineers in an effort to mold existing technology to the needs of agricultural water users. One or more prototype water level meters will be developed that meets the needs of measuring small irrigation diversions.

The prototype water level sensor and recorder constructed in one package was completed this year. The device, now referred to as the open channel flow recorder, consists of a central processing unit chip, an ultrasonic water level sensor, and a solar power supply. It is a simplified version of many acoustic flow metering devices that are currently on the market. The device was tested with satisfactory results in the WRRL laboratory and, with the assistance of the Montana Area Office, installed on an irrigation facility. The prototype open channel flow recorder successfully operated during a portion of the irrigation season with no problems or complaints by the users. Further testing is continuing.
This device is the only option that provides a functional solution that is easy to use and operate at low cost. A few irrigation districts and manufacturers have expressed interest in using and supplying the newly developed open channel flow recorder.

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